

# **CONSTRUCTABILITY REVIEW PROCEDURES**

## **I. GENERAL**

The Construction Engineering Services (CES) Bureau Constructability Review Section (CR Section) is responsible for implementing the Constructability Review (CR) Program and the Value Analysis (VA) Program and incorporating them in the current MDT Project Development Process. General responsibilities include the following:

- Provide coordination between Construction Services and Preconstruction Services for implementing the programs.
- Conduct constructability reviews.
- Provide CR review comment documentation and adjudication.
- Conduct VA Studies.
- Document VA study recommendation adjudication and/or implementation.
- Monitor programs.
- Coordinate and monitor follow-up actions resulting from the programs.
- Distribute and follow-up on “lessons learned”.
- Maintain records and measure effectiveness of the programs.

Even though the two programs follow a similar work flow chart, except during their initial stages, this procedure only outlines the Constructability Review Program. A separate procedure will outline the Value Analysis Program.

## **II. PROCESS**

After a project has been nominated, whether design is to be performed by the District, Preconstruction or by Consultant through Consultant Design Services, the CR Section will provide report/plan constructability reviews and post construction reviews by generally following the attached flow chart and the procedures outlined below. *(The term “Project Design Manager” used in this outline may be from the District, Preconstruction or a Consultant via Consultant Design Services.)*

- 1) Provide single point of contact within the Construction Engineering Services (CES) Bureau for all constructability report/plan reviews and post construction reviews.
- 2) The Project Design Manager (PDM) invites Constructability Reviewer (CR) to attend and provide input during the Preliminary Field Review (PFR) site visit and/or meeting. CR provides constructability input at the meeting. If the CR cannot attend the meeting, or if no meeting is held, the CR will provide written comments and maintain an electronic and hard copy of the response.
- 3) PDM provides two copies of PFR Report to CR Section Supervisor (Mac McArthur) for review, comment and input. CR Section Supervisor will forward one copy to the area CR. CR verifies input was incorporated in meeting minutes and place copy in CR Section project file. Maintain the other copy in Helena files after noting CR name and date forwarded. CR will enter appropriate information on the Report/Plan Review Tracking Log.

- 4) CR reviews using internal checklist and responds to PDM (originator) via e-mail and copies CR Section electronic project file. The hard copy report approval and concurrence cover sheets will be returned to the originator along with comments. The CR will maintain a hard copy and forward a hard copy to the CR Section Supervisor for Helena files.
- 5) PDM invites CR to attend Preliminary Alignment/Grade Review meeting to provide input. If the CR cannot attend the meeting, or if no meeting is held, the CR will provide written comments and maintain an electronic and hard copy of the response.
- 6) PDM provides two copies of A/GR Report to CR Section Supervisor (Mac McArthur) for review, comment and input. CR Section Supervisor will forward one copy to the area CR. CR reviews using internal checklist and verifies input incorporated in meeting minutes and copies CR Section project file. Maintain the other copy in Helena files after noting CR name and date forwarded. CR will enter appropriate information on the Report/Plan Review Tracking Log.
- 7) CR verifies disposition of input and comments provided during A/GR phase. CR reviews using internal checklist and responds to PDM and copies CR Section project file.
- 8) *If necessary, CR Section Supervisor will coordinate an issues resolution meeting with the PDM for any CR input/comments that have not been adequately addressed during previous project development phases by additional research, analysis or evaluations by the design team. The PDM and members of the design team, CR Section Supervisor and appropriate CR, Area Design Engineer, CES Bureau Chief and others that could provide input to resolve specific issues, will attend the issues resolution meeting. The CR Section Supervisor will keep a record, prepare and distribute meeting minutes to include action items and final issue disposition.*
- 9) PDM provides two copies of SOW Report to CR Section Supervisor (Mac McArthur) for review, comment and input. In the case of a combined PFR/Scope of Work report, follow the steps outlined in 3) and 4) with the CR providing the approval signature for the CES Bureau. CR Section Supervisor will forward one copy to the area CR. CR reviews using internal checklist and verifies input incorporated in meeting minutes and copies CR Section project file. Maintain the other copy in Helena files after noting CR name and date forwarded. CR will enter appropriate information on the Report/Plan Review Tracking Log.
- 10) PDM invites CR to attend Plan-In-Hand (PIH) office and/or field review meeting to provide input. If the CR cannot attend the meeting, or if no meeting is held, the CR will provide written comments and maintain an electronic and hard copy of the response.
- 11) PDM provides copy of PIH Report to CR for review, comment and input. CR verifies disposition of input and comments provided during previous project development phases. CR responds to PDM and copies Section project file.
- 12) *If necessary, CR Section Supervisor will coordinate a final issues resolution meeting with the PDM for any CR input/comments that have not been adequately addressed during previous project development phases by additional research, analysis or evaluations by the design team. The PDM and members of the design team, CR Section Supervisor and appropriate CR, Area Design Engineer, CES Bureau Chief and others that could provide input to resolve specific issues, will attend the*

*issues resolution meeting. The CR Section Supervisor will keep a record, prepare and distribute meeting minutes to include action items and final issue disposition.*

- 13) Contract Plans Bureau provides two copies of Preliminary Plans and Special Provisions (Final Plan Review Report) to CR Section Supervisor (Mac McArthur) for review, comment and verification of previous input and comment disposition. CR Section Supervisor will forward one copy to the area CR and maintain the other copy in Helena files after noting CR name and date forwarded. CR responds to Contract Plans Bureau and copies PDM, CR Section Supervisor and CR Section project file. CR will enter appropriate information on the Report/Plan Review Tracking Log.
- 14) Contract Plans Bureau provides two copies of Blue Sheets to CR Section Supervisor (Mac McArthur) for review, comment and verification of previous input and comment disposition. CR Section Supervisor will forward one copy to the area CR and maintain the other copy in Helena files after noting CR name and date forwarded. CR coordinates response to Contract Plans Bureau with appropriate District Construction Engineer (DCE) and copies PDM, CR Supervisor and Section project file.
  - For projects with minor comments or no comments, CR will call/e-mail DCE to provide a coordinated response to Contract Plans Bureau.
  - For projects with major comments and issues that require resolution prior to bidding, CR will coordinate and follow-up with DCE to address issues, develop consensus and recommend a response to Contract Plans Bureau.
- 14) During Construction, CR will monitor project data and information to determine the effectiveness of specific “lessons learned” items from previous projects implemented during the project development and design process. CR will coordinate with the Engineering Project Manager (EPM), DCE and appropriate District Construction Reviewer to obtain relevant data and information.
- 15) CR to coordinate with appropriate DCE to conduct post construction review meeting for specific project and prepare the Post Construction Review Report (PCRR). There will be two types of PCR procedures that will be described briefly below and in more detail in a separate procedure.
  - **Informal PCR** (EPM De-Briefing) – This process will be utilized for all projects that are not selected for a formal post construction review or small, straight forward projects that do not warrant the time and resources required to complete a formal post construction review. CR will coordinate and perform a debriefing with the EPM (and others as needed). CR will prepare a brief written PCR report that outlines items reviewed and discussed during the debriefing.
  - **Formal PCR** – The formal PCR process will be an in-depth review that involves all functional units meeting to review and discuss the plans, specifications, constructability issues and determine items that went well and items that created problems and to develop solutions and consensus for those items that created problems. CR will prepare a PCR Report, identify action items in the report, and provide follow-up to ensure action items are being recorded, tracked and implemented for future projects, when appropriate.

- 16) Regardless of the type of PCR performed, the CR will facilitate implementation of Lessons Learned at an early phase for future projects through interaction and coordination with District Administrators, District Engineering Services Supervisors, District Construction Engineers, Construction Engineer and the Preconstruction Engineer.
- 17) The CR Section Supervisor will monitor the overall constructability process and work plan to:
- Ensure consistency of the process.
  - Develop priorities and maintain schedules.
  - Establish a database and/or tracking logs to monitor, distribute and follow-up on “Lessons Learned”.
  - Establish a database and/or tracking logs to assemble, maintain and monitor the data and information related to costs, benefits and effectiveness of the process.
  - Prepare bi-annual Status Reports outlining overall CR Section activities and performance.

# **CONSTRUCTABILITY REVIEW FLOW CHART**

